1: AW035333. Reports EST280696 tomato ...[gi:5894089] Links

```
LOCUS       AW035333                469 bp    mRNA    linear   EST 18-MAY-2001
DEFINITION  EST280696 tomato callus, TAMU Lycopersicon esculentum cDNA clone
            cLEC40H22 similar to protein inhibitor II, mRNA sequence.
ACCESSION   AW035333
VERSION     AW035333.1  GI:5894089
KEYWORDS    EST.
SOURCE      Lycopersicon esculentum (Solanum lycopersicum)
  ORGANISM  Lycopersicon esculentum
            Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta;
            Spermatophyta; Magnoliophyta; eudicotyledons; core eudicotyledons;
            asterids; lamiids; Solanales; Solanaceae; Solanum; Lycopersicon.
REFERENCE   1  (bases 1 to 469)
  AUTHORS   Alcala,J., Vrebalov,J., White,R., Matern,A.L., Vision,T., Holt,I.E.
            , Liang,F., Upton,J., Craven,M.B., Bowman,C.L., Ahn,S., Ronning
            ,C.M., Fraser,C.M., Martin,G.B., Tanksley,S.D. and Giovannoni,J.
  TITLE     Generation of ESTs from tomato callus tissue
  JOURNAL   Unpublished (1999)
COMMENT     Contact: CUGI
            Clemson University Genomics Institute
            Clemson University
            100 Jordan Hall, Clemson, SC 29634, USA
            Email: http://www.genome.clemson.edu/orders/index.html
            5 prime sequence.
FEATURES             Location/Qualifiers
     source          1..469
                     /organism="Lycopersicon esculentum"
                     /mol_type="mRNA"
                     /cultivar="TA496"
                     /db_xref="taxon:4081"
                     /clone="cLEC40H22"
                     /tissue_type="callus"
                     /dev_stage="25-40 days old"
                     /lab_host="XL1-Blue MRF'"
                     /clone_lib="tomato callus, TAMU"
                     /note="Vector: pBlueScript SK(-); Site_1: EcoR1; Site_2:
                     Xho1; supplier: Giovannoni laboratory; cLEC - Cotyledons
                     of seedlings 7-10 days post-germination were excised, cut
                     at both ends and placed on MS medium with no selection.
                     Mixed callus was harvested at 25 and 40 days and included
                     undifferentiated masses. Tomato Callus EST Library"
ORIGIN
        1 gttaattacg ataaatttat aaagcatatc tacaatggct gtttacaaag ttagtttcct
       61 tgctcaccta cttgttcttg gaatgtatct actagtaagc acggtggaac acgctaatgc
      121 ttgtactaaa gaatgtggta atcttggcta tgggatatgc ccaggttcag aaggaagtcc
      181 agaaaatcca atatgtacca attgttgctc tggctataag ggttgcaact attataacgc
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      241 taatggaact tttatttgtg aaggaacgtc tgatccaaaa aatcctaaca tttgcccctc
      301 atattgtgat ccacaaattg cctattcaaa gtgtccacgt tcagaaggaa agacgataat
      361 ctatcccaca ggatgtacga cgtgttgcac tggttacaag ggttgctact attttggtca
      421 agatggagag tttgtgtgtg aaggagagag tattgaacct aagggttgt
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Aug 17 2005 15:39:53

FILE 'HOME' ENTERED AT 14:35:51 ON 26 AUG 2005

=> file biosis caplus caba agricola

=> s ryan, c?/au and inhibitor
L1 584 RYAN, C?/AU AND INHIBITOR

=> s l1 and tomato
L2 338 L1 AND TOMATO

=> s l1 and py<2000
3 FILES SEARCHED...
L3 501 L1 AND PY<2000

=> s l3 and transform?
L4 61 L3 AND TRANSFORM?

=> duplicate remove l4

L5 29 DUPLICATE REMOVE L4 (32 DUPLICATES REMOVED)

=> d ti 1-29

L5 ANSWER 1 OF 29 CABA COPYRIGHT 2005 CABI on STN
TI Proteinase **inhibitor**-inducing activity of the prohormone prosystemin resides exclusively in the C-terminal systemin domain.

L5 ANSWER 2 OF 29 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation on STN
TI Differential processing of a common substrate, ProIL-1beta, by ICE/CASPASE-1 extracted from **transformed** and non-**transformed** cell types.

L5 ANSWER 3 OF 29 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation on STN
TI Proteinase inhibitors I and II from potatoes specifically block UV-induced activator protein-1 activation through a pathway that is independent of extracellular signal-regulated kinases, c-Jun N-terminal kinases, and P38 kinase.

L5 ANSWER 4 OF 29 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation on STN
TI Overexpression of the prosystemin gene in transgenic tomato plants generates a systemic signal that constitutively induces proteinase **inhibitor** synthesis.

L5 ANSWER 5 OF 29 CAPLUS COPYRIGHT 2005 ACS on STN DUPLICATE 3
TI Expression of an antisense prosystemin gene in tomato plants reduces resistance toward Manduca sexta larvae

L5 ANSWER 6 OF 29 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation on STN
TI Proteinase-**inhibitor** synthesis in tomato plants: Evidence for extracellular deposition in roots through the secretory pathway.

L5 ANSWER 7 OF 29 CABA COPYRIGHT 2005 CABI on STN
TI Proteinase **inhibitor** gene transfer for improving insect resistance in plants.

L5 ANSWER 8 OF 29 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation on STN
TI STRUCTURE EXPRESSION AND ANTISENSE INHIBITION OF THE SYSTEM IN PRECURSOR GENE.

L5 ANSWER 9 OF 29 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved. (2005) on STN
TI Structure, expression, and antisense inhibition of the systemin precursor gene.

L5 ANSWER 10 OF 29 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation on STN
DUPLICATE 6
TI Differential expression of a chimeric CaMV-tomato proteinase **inhibitor** I gene in leaves of **transformed** nightshade, tobacco and alfalfa plants.

L5 ANSWER 11 OF 29 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation on STN
DUPLICATE 7
TI REGULATION OF EXPRESSION OF PROTEINASE **INHIBITOR** GENES BY METHYL JASMONATE AND JASMONIC ACID.

L5 ANSWER 12 OF 29 CABA COPYRIGHT 2005 CABI on STN
TI Expression of proteinase **inhibitor** genes from potato and tomato in transgenic plants enhances defense against an insect predator.

L5 ANSWER 13 OF 29 CABA COPYRIGHT 2005 CABI on STN DUPLICATE 8
TI Wound-inducible nuclear protein binds DNA fragments that regulate a proteinase **inhibitor** II gene from potato.

L5 ANSWER 14 OF 29 CABA COPYRIGHT 2005 CABI on STN DUPLICATE 9
TI Wound-inducible potato **inhibitor** II genes: enhancement of expression by sucrose.

L5 ANSWER 15 OF 29 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation on STN
DUPLICATE 10
TI REGULATION OF EXPRESSION OF A WOUND-INDUCIBLE TOMATO **INHIBITOR** I GENE IN TRANSGENIC NIGHTSHADE PLANTS.

L5 ANSWER 16 OF 29 CABA COPYRIGHT 2005 CABI on STN
TI **Transforming** plants with proteinase **inhibitor** genes for insect resistance.

L5 ANSWER 17 OF 29 CABA COPYRIGHT 2005 CABI on STN
TI Engineering proteinase **inhibitor** genes for plant defense against predators.

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DUPLICATE 11
TI EXPRESSION OF PROTEINASE INHIBITORS I AND II IN TRANSGENIC TOBACCO PLANTS EFFECTS ON NATURAL DEFENSE AGAINST MANDUCA-SEXTA LARVAE.

L5 ANSWER 19 OF 29 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation on STN
DUPLICATE 12
TI INHIBITION OF RADIATION-INDUCED **TRANSFORMATION** OF C3H10T1-2 CELLS BY CARBOXYPEPTIDASE **INHIBITOR** 1 AND **INHIBITOR** II FROM POTATOES.

L5 ANSWER 20 OF 29 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation on STN
DUPLICATE 13
TI FUNCTIONAL ANALYSIS OF THE 3' CONTROL REGION OF THE POTATO WOUND-INDUCIBLE PROTEINASE **INHIBITOR** II GENE.

L5 ANSWER 21 OF 29 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation on STN
DUPLICATE 14
TI PROTEINASE **INHIBITOR** GENE FAMILIES STRATEGIES FOR **TRANSFORMATION** TO IMPROVE PLANT DEFENSES AGAINST HERBIVORES.

L5 ANSWER 22 OF 29 CAPLUS COPYRIGHT 2005 ACS on STN DUPLICATE 15
TI Molecular biology of wound-inducible proteinase inhibitors in plants

L5 ANSWER 23 OF 29 CAPLUS COPYRIGHT 2005 ACS on STN
TI Oligosaccharide signaling for proteinase **inhibitor** genes in plant leaves

L5 ANSWER 24 OF 29 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation on STN
DUPLICATE 16

TI INHIBITION OF RADIATION-INDUCED **TRANSFORMATION** OF C3H-10T1-2 CELLS BY CHYMOTRYPSIN **INHIBITOR** 1 FROM POTATOES.

L5 ANSWER 25 OF 29 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation on STN
DUPLICATE 17TI WOUND-INDUCIBLE EXPRESSION OF A POTATO **INHIBITOR** II
CHLORAMPHENICOL ACETYLTRANSFERASE GENE FUSION IN TRANSGENIC TOBACCO PLANTS.

L5 ANSWER 26 OF 29 CAPLUS COPYRIGHT 2005 ACS on STN
TI A possible role for 3' sequences of the wound-inducible potato proteinase **inhibitor** IIK gene in regulating gene expression

L5 ANSWER 27 OF 29 CABA COPYRIGHT 2005 CABI on STN
TI A possible role for 3[prime] sequences of the wound-inducible potato proteinase **inhibitor** IIK gene in regulating gene expression.

L5 ANSWER 28 OF 29 CAPLUS COPYRIGHT 2005 ACS on STN
TI Characterization and expression of a wound-inducible proteinase **inhibitor** II gene from potato

L5 ANSWER 29 OF 29 CABA COPYRIGHT 2005 CABI on STN
TI The regulation of expression of proteinase **inhibitor** genes in food crops.

=> d bib abs 18 12 17

L5 ANSWER 18 OF 29 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation on STN
DUPLICATE 11
AN 1990:93084 BIOSIS
DN PREV199089052435; BA89:52435
TI EXPRESSION OF PROTEINASE INHIBITORS I AND II IN TRANSGENIC TOBACCO PLANTS EFFECTS ON NATURAL DEFENSE AGAINST MANDUCA-SEXTA LARVAE.
AU JOHNSON R [Reprint author]; NARVAEZ J; AN G; **RYAN C**
CS INST BIOL CHEM AND GRADUATE PROGRAM IN PLANT PHYSIOL, WASHINGTON STATE UNIV, PULLMAN, WASHINGTON 99164-6340, USA
SO Proceedings of the National Academy of Sciences of the United States of America, (1989) Vol. 86, No. 24, pp. 9871-9875.
CODEN: PNASA6. ISSN: 0027-8424.
DT Article
FS BA
LA ENGLISH
ED Entered STN: 9 Feb 1990
Last Updated on STN: 9 Feb 1990
AB Genes containing the cauliflower mosaic virus 35S promoter fused to open reading frames coding for tomato proteinase **inhibitor** I, tomato **inhibitor** II, and potato **inhibitor** II were expressed in transgenic tobacco plants. **Inhibitor** I and II proteins were identified by immunoblotting and quantified by immunoradial diffusion. Both inhibitors exhibited the molecular weights found for the native proteins in their natural environments. Extracts of leaves from **transformed** plants contained inhibitory activities against trypsin and chymotrypsin that reflected the levels of **inhibitor** I or II protein present. The results demonstrate that in tobacco leaves the introns of both **inhibitor** I and **inhibitor** II genes were excised correctly and that pre and prepro **inhibitor** I and II proteins were correctly processed. Growth of Manduca sexta larvae (tobacco hornworms) feeding on leaves of transgenic plants containing **inhibitor** II, a powerful **inhibitor** of both trypsin and chymotrypsin, was significantly retarded, compared to growth of larvae fed untransformed leaves. Levels of **inhibitor** II protein as low as 50 μg/g of tissue moderately affected larval growth, whereas levels above 100 μg/g severely reduced growth. The presence of tomato **inhibitor** I protein, a potent **inhibitor** of chymotrypsin but a weak **inhibitor** of trypsin, in transgenic tobacco leaves

had little effect on the growth of the larvae. These experiments indicated that trypsin inhibitory activity, but not chymotrypsin inhibitory activity, was mainly responsible for the inhibition of larval growth.

L5 ANSWER 12 OF 29 CABA COPYRIGHT 2005 CABI on STN
AN 90:97353 CABA
DN 19901615194
TI Expression of proteinase **inhibitor** genes from potato and tomato in transgenic plants enhances defense against an insect predator
AU Johnson, R.; Narvaez, J.; An, G.; **Ryan, C.**; Vayda, M. E. [EDITOR]; Park, W. D. [EDITOR]
CS Institute of Biological Chemistry, Washington State University, Pullman, WA 99163, USA.
SO The molecular and cellular biology of the potato, (**1990**) pp. 97-102. Biotechnology in Agriculture No. 3. 18 ref.
Publisher: CAB International. Wallingford
ISBN: 0-85198-654-4
CY United Kingdom
DT Book; Book Article
LA English
ED Entered STN: 19941101
Last Updated on STN: 19941101
AB Following a brief survey of research on potato and tomato proteinase inhibitors and their role as defensive proteins, a study is described in which genes from potato and tomato encoding proteinase inhibitors I and II were incorporated into the genome of tobacco. Leaves of transgenic tobacco plants containing high levels (50-300 [mu]g proteinase **inhibitor** protein/g leaf tissue) of potato and tomato proteinase inhibitors were fed to larvae of Manduca sexta. Larvae fed leaves containing either potato or tomato proteinase **inhibitor** II (possessing strong trypsin and chymotrypsin inhibitory activity) grew more slowly and consumed less than those fed control leaves. Those fed leaves containing proteinase **inhibitor** I (possessing chymotrypsin inhibitory activity) grew at nearly the same rate as those fed control leaves, reduction of larval growth being only 15% in the most severe cases.

L5 ANSWER 17 OF 29 CABA COPYRIGHT 2005 CABI on STN
AN 92:30599 CABA
DN 19921627217
TI Engineering proteinase **inhibitor** genes for plant defense against predators
AU **Ryan, C. A.**; Moloshok, T.; Pearce, G.; An, G.; Thornburg, R. W.; Hall, G.; Johnson, R.; Farmer, E. E.; Palm, C.
CS Institute of Biological Chemistry, Washington State University, Pullman, WA 99164-6340, USA.
SO JIAS, Journal of the Iowa Academy of Science, (**1990**) Vol. 97, No. 1, pp. 9-13. 26 ref.
ISSN: 0896-8381
DT Journal
LA English
ED Entered STN: 19941101
Last Updated on STN: 19941101
AB Studies on this subject are reviewed and information is presented under the following headings: (1) wound inducible serine proteinase inhibitors; (2) wound signals for proteinase **inhibitor** synthesis in excised tomato leaves; (3) wound inducible proteinase **inhibitor** genes; and (4) strategies to manipulate proteinase **inhibitor** genes for natural plant defence. Proteinase **inhibitor** genes have been isolated and characterized from wounded tomato and potato leaves. The classic example is cited of cowpea trypsin **inhibitor** genes producing resistance to Heliothis virescens in transgenic tobacco.

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STN INTERNATIONAL SESSION SUSPENDED AT 14:42:49 ON 26 AUG 2005